By L. JAY ATKINSON

Agricultural Production and Adjustment

Rapid Reduction in Farm Population—Increased Efficiency in Production—Per Capita Incomes Advance

IN contrast to the rise in the nonfarm economy, farm production and income in 1962 are about even with 1961. For production this means that output, equal to the high point reached last year, is 7 percent above the 1957–59 average. Farm incomes this year and last year have been well above other recent years except 1958. Average incomes on a per capita or per farm basis have shown a considerable rise in the past few years due to declining trends in the number of farms and farm population. The income per capita of farm residents including income from nonfarm sources has risen in relation to that of nonfarm residents in recent years and the ratio of farm to nonfarm per capita income is exceeded in only 2 years (1948 and 1951) in the past three decades, as shown in table 1.

These comparisons are based on new series of the Department of Agriculture which incorporate 1959 census data and new definitions. The income concept for the farm population is now on a personal income basis and is a component of OBE's personal income series. The new estimates show a more rapid adjustment in agriculture than had been apparent previously.

The changes which are occurring are quite diverse, representing both an acceleration of long-standing trends, and some new developments. The forces making for change include rapid technological advances and spreading urbanization which have brought increased specialization and enlargement of farms, primarily through two developments: (1) a substantial decline in the number of small and less productive farms. Commercial agriculture has remained in firm hands—mechanizing, enlarging and renting the land of the withdrawing small operators. (2) The exit of the small-farming group into nonfarm pursuits. Specifically, a large proportion of the young adult group coming of age to enter the labor force has gone into nonfarm jobs and usually into nonfarm residence. The part-time group living on farms and working off farms, which had shown a rise in earlier periods, remains large, with its percentage share of households rising, although the absolute numbers are moderately lower than 5 years ago.

In addition to the longer term trends in agriculture, current developments in the principal aspects of the farm economy are of special interest. These include a reduction in surpluses of feed and food grains, and an increase in stocks of cotton and of dairy products.

Current Supply-Demand

One of the substantial changes in agriculture in recent years has been the check in the accumulation of wheat stocks and the passage of legislation for a new control program to be effective for the 1964 crop. Carryover of wheat had reached a high of 1.4 billion bushels on June 30, 1961. It was reduced 100 million bushels in the crop year ended June 30, 1962 as drought conditions reduced yields and exports were expanded to a record rate of over 700 million bushels.

The wheat harvest this summer was again reduced with a voluntary diversion program and a mandatory 10 percent cut in acreage from the 55-million acre allotment of many years standing. Although exports—at about 600 million bushels—are expected to be somewhat below the record rate of the past 2 years, the estimated carryover as of next June is expected to be reduced another 100 million bushels.

For the crop to be harvested in 1963, the voluntary diversion program is again to be in effect, but the mandatory cut in acreage is not—i.e., the 55-million acre allotment is restored for one year. Thus, production may be up somewhat from the past year and carryover stocks may not show much change.

For the 1964 crop a new program goes into effect. The old 55-million acre minimum allotment which resulted in a buildup in stocks is to be discontinued and the Secretary of Agriculture is authorized to set an allotment which will provide some reduction in carryover.

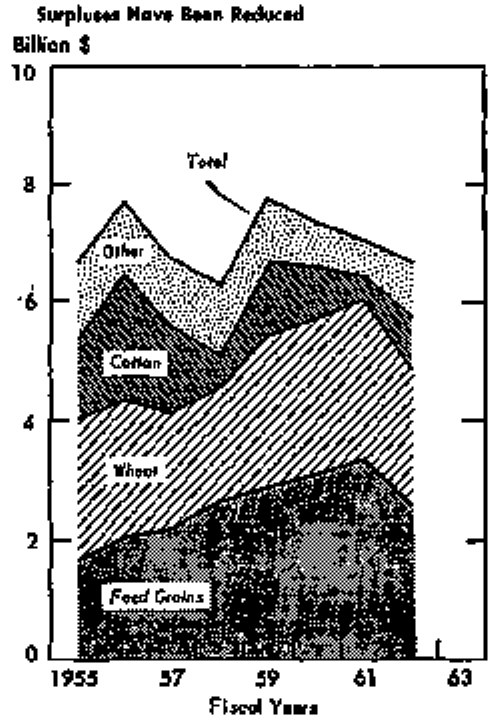
Prices are to be supported at two levels via a marketing certificate program. Wheat for domestic food and for some portion of exports is to be supported at between 65 and 90 percent of parity (i.e., between $1.60 and $2.20 per bushel, based on current parity prices). For the remaining wheat, a lower price support is provided, consistent with the value of wheat used as a livestock feed and with world wheat prices.

Feed surplus reduced

Feed grain stocks have shown a more substantial reduction than wheat (or food grains). Beginning with a peak carryover of 85 million tons from the 1960 crop, the total was down to 71 million tons this fall and is estimated to

CCC LOANS AND INVENTORIES FOR PRICE SUPPORT PROGRAMS

Surpluses Have Been Reduced



Note: Inventories are on a revised accounting basis and not directly comparable with those published previously.

Data: U.S. Dept. of Agri.

U.S. Department of Commerce, Office of Business Economics 62-12-4 decline to 57 million tons at the end of the 1962 crop year. The cut in surplus has been accomplished via a temporary diversion program together with increased utilization of grain both in the United States and abroad.

A voluntary reduction program is to be in effect for the 1963 crop, similar to those of the past 2 years, except that the support price is increased from $1.20 per bushel to $1.25 and is to include an 18¢ payment as well as a $1.07 support price. A new feature is that the payment will be made on production utilized on the farms of cooperators as well as upon that portion sold. Previously, support benefits were available only for grain sold. The other principal change in the 1963 program is that diversion payments are to be at a lower rate than in 1962.

Cotton stocks higher

With some increase in acreage and good yields, cotton production at 14.7 million bales in 1962 is higher than in other recent years. Domestic consumption is lagging and exports have been running below the high rates of a few years ago. As a consequence of these developments stocks are again rising from the low point reached in 1961. Carryover at the end of the 1962 crop year may be about 9 million bales, up 2 million from 2 years earlier. The acreage allotment has been reduced for the 1963 crop but possible new legislation may permit a higher allotment.

Offsetting changes in livestock output

Milk production has been higher in 1962 than a year earlier, but demand has not kept pace. Increased marketings did not offset the effects of lower support prices for dairy products so cash receipts from sale of milk and cream are down slightly. Price supports for manufactured dairy products were lowered in the spring of this year, following a decline in consumption of dairy products in 1961 and an increase in production during the year. Support purchases have continued upward during the past 2 years, and account for about 9 percent of milk production in 1962. Although distribution of CCC dairy products has increased, stocks have shown a large rise.

Meat animal production has continued to expand at a moderate rate comparable with the expansion in demand. Prices have been well sustained, and cash receipts from marketings have been well ahead of 1961.

The number of cattle has been expanding for about 5 years, but unlike the preceding cattle cycle of rapid expansion followed by sharp liquidation, the current rise is more moderate. Thus, slaughter has expanded concurrently with the buildup in herds whereas in the earlier cycle cattle and calf slaughter was curtailed to build up the breeding herd.

A large part of the current rise in beef production is in increased grain feeding or "finishing" of steers and heifers. Not only is such expansion well adapted to the rising demand for high grade beef, but it is rather stable from the supply side. This is because the turnover of cattle sent to the feedlot is shorter than the turnover of cows and calves kept to increase production. Beef production in 1963 is expected to continue upward, possibly a little faster than the increase in population.

There has been a shift in hog production during the past year. The pig crop this spring was smaller than a year earlier but the fall crop was larger than in 1961 and increased pork production is expected in the period ahead. Hog prices were strong through the summer months, but price weakness developed in the fall of 1962 and prices are expected to be somewhat lower in 1963.

Table 1.—Per Capita Personal Income of Farm and Nonfarm Population

Year	Of farm population from—			Of nonfarm population from all sources	Per capita income all sources, farm as percentage of nonfarm
	Farm sources	Nonfarm sources	All sources		
	Dollars	*Dollars*	*Dollars*	*Dollars*	*Percent*
1934	99	67	166	512	32.4
1940	161	89	250	660	37.9
1945	528	172	700	1,334	52.5
1948	743	220	963	1,529	63.0
1950	622	232	854	1,618	52.8
1951	754	289	1,043	1,765	59.1
1952	723	301	1,024	1,851	55.3
1953	690	315	1,005	1,910	52.6
1954	691	308	999	1,880	53.1
1955	596	322	918	1,907	48.1
1956	642	351	993	2,103	47.2
1957	690	376	1,066	2,166	49.2
1958	805	392	1,197	2,165	55.3
1959	713	431	1,144	2,276	50.3
1960	791	465	1,256	2,309	54.4
1961	899	474	1,373	2,345	58.5

Source: U.S. Department of Agriculture.

Note.—The personal incomes underlying cols. 3 and 4 are now the same as the OBE personal income series.

Hog price changes reflect both the greater volatility of supply than in the case of beef and the pronounced consumer preference for beef that has become especially evident in recent years. Research is being done to change the character of pork to meet changing consumer tastes, but significant shifts have not yet occurred in the pork that is being marketed.

Accelerated Changes in Farming

Aside from the current shifts within agriculture, basic changes are occurring in the farming industry. One important trend is the rise in aggregate output of farm products at an average rate of 2 percent annually. (See top panel of the chart on page 26.) Although rising exports have absorbed part of the increase in output, the sustained rise in production has exceeded that in consumption and surpluses have been substantial (see chart on page 24). Preliminary estimates for 1962 indicate little change in aggregate output from last year.

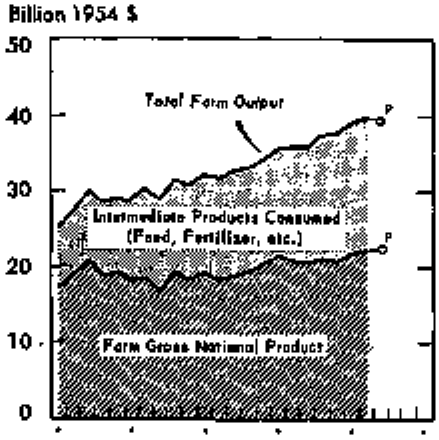
The long-term rise in aggregate output has been accompanied by a more moderate advance in farm GNP of around 1½ percent annually during the past two decades. Farm GNP is one of the industry breakdowns of GNP presented for major industries in the October 1962 Survey of Current Business. For farms, the gross product is the value added by agriculture, after adjustment for utilization of intermediate products—such as feed, fertilizer, fuel, etc. Deductions from aggregate farm products are made for off-farm supplies used up and for interfarm sales—e.g., feeder livestock sold to cattle-fattening farms—so as to eliminate double-counting. The difference between the rate of advance in aggregate output and in farm GNP reflects the increasing proportion of intermediate products consumed. In the past two decades, intermediate products have risen from about 30 percent of total farm output to 45 percent.

The increase in farm GNP has been accompanied by a roughly comparable expansion in the stock of agricultural capital (including land) utilized and a sharp drop in labor employed, principally that of the farm proprietor, and

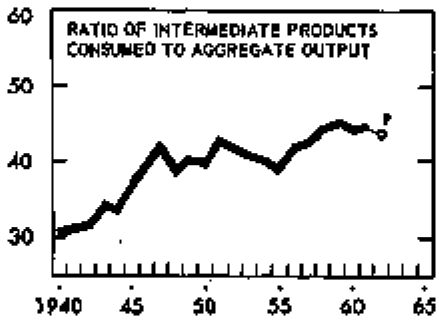
FARM OUTPUT AND PRODUCTIVITY

AGGREGATE OUTPUT Has Risen at an Average Rate of About 2 Percent Annually

FARM GNP (Value Added by Farms) Has Risen At a Rate of About 1-1/2 Percent



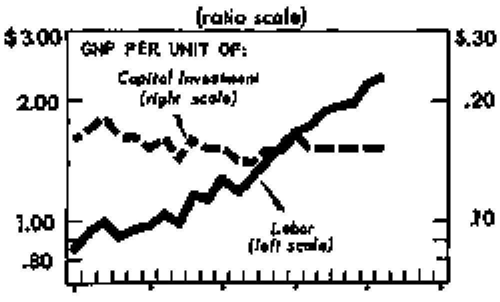
• INTERMEDIATE PRODUCTS CONSUMED Have Risen at a Rate of 4 Percent



• Farm GNP Per Man-Hour Has Shown Accelerated Growth Since 1950
7 Percent Annually in the Past Decade
3-1/2 Percent Annually in the Preceding Decade

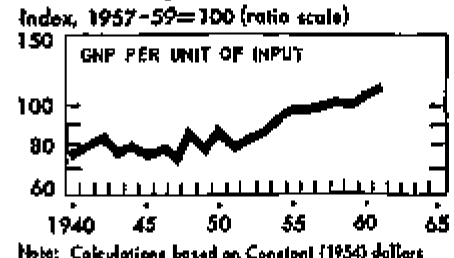
• Ratio of Output to Capital Has Been Stable

(ratio scale)



• Farm GNP Per Unit of Capital and Labor Has Advanced at a . . .
3 Percent Annual Rate in the Past Decade
1-1/2 Percent Annual Rate in the Preceding Decade

Index, 1957-59=100 (ratio scale)



Note: Calculations based on Constant (1954) dollars

Basic data: U.S. Dept. of Agri.

U.S. Department of Commerce, Office of Business Economics 62-12-5

unpaid family labor.[1] As a consequence farm GNP per dollar of investment has remained virtually stable during the past two decades, (as shown in the chart on page 26) and farm GNP per hour of labor has shown a strong advance, averaging 5 percent in the past two decades, and increasing to a 7 percent average annual rate of change in the past decade.

If capital and labor are considered together, as in the last panel, then farm GNP per unit of total input has risen at an average annual rate of a little less than 2 percent in the past two decades and about 3 percent in the past several years. It may be noted that these rates of change are about the same as those derived by the Department of Agriculture for a similar relationship between total inputs into farming of both farm and nonfarm resources and aggregate farm output. Since these are different concepts, changes in the ratio of value-added (Farm GNP) to farm inputs might diverge from changes in total output per unit of total input, although they have been broadly similar in the past two decades.

For some comparisons, the total input-output ratio is the more appropriate concept, e.g., when total demand or supply of agricultural commodities is involved. On the other hand the farm GNP per unit of capital and labor is appropriate when one wishes to compare resource use on the farm with resource use elsewhere. Thus, it may be noted that farm GNP per unit of capital and labor has advanced moderately faster than the comparable ratio for the nonfarm economy in the past decade.

One caution is that the individual year comparisons are not very meaningful, partly because of the importance of weather conditions upon crop yields. The combination of a rather steady rise in inputs and of considerable year-to-year fluctuations in output results in rather large annual shifts in the output-input ratio which are often due to temporary influences.[2]

Rapid adjustment in agriculture

In broad terms, the increased rate of output either per unit of labor or per unit of labor and capital combined in recent years reflect a more rapid adjustment of agriculture than in earlier years. This acceleration is becoming more evident as the results of the 1959 Census of Agriculture become available and are incorporated into the principal agricultural annual series on farm income and population. Preliminary results from the sample Census for 1960 indicate a further substantial change in that year. Labor force figures for 1961 and 1962 suggest further decreases in agricultural employment.

The scope of the changes in agriculture is suggested by the recent revision in farm population for 1960 from 20.5 million to 15.6 million.[3] Although the old series on farm population had indicated a sizable withdrawal of population from farms, the new series show that the decline had been even more rapid. On the basis of the former series, farm population declined 4½ million in the decade ending in 1960, whereas the revised series show a drop of 7.4 million. The preliminary esti-

Table 2.—Food Production, Consumption, and Prices

[1957-59=100]

Year	Food marketings and home consumption	Civilian per capita food consumption	Wholesale price of processed foods	Consumer price of food
1955	95	100	94	94
1956	100	102	94	95
1957	97	100	98	98
1958	100	99	103	102
1959	103	101	99	100
1960	105	101	100	101
1961	107	101	101	103
1962 p	107	101	1 100	1 104

p Preliminary.

1. Based on 10 months' average.

Source: U.S. Department of Agriculture and U.S. Department of Labor.

1. The estimates of depreciable capital stocks in agriculture vary with the assumed rate of depreciation. The statements above are based upon the stocks estimate of the Department of Agriculture in constant dollars including land as shown in the Balance Sheet of Agriculture.

2. In constructing the input index, average 1940–49 rates of remuneration for capital and labor were used for that decade and average 1950–59 rates were used for subsequent years. The rate paid to hired farm labor was also applied to family labor, and the residual return rate on farm capital for each decade was used for each year of the period, and the two series were linked together at 1950. Since the amount of labor is decreasing rapidly and the amount of capital is showing some rise, it can be deduced that an increase in the wage rate which results in a considerable reduction in the residual return to capital will produce a more rapid rise in the output-input ratio.

3. Only a part—less than 1 million—of the revision in farm population is attributable "strictly" to the change in the definition of a farm. Most of the revision is due to an improved procedure of separating farm from nonfarm residence mainly on the basis of farm products sold. As a result of new questions asked in the 1960 Census it has been established that several million persons who say that they "live on farms" are not in fact part of the farm population. These include persons who rent a house and yard in the open country as well as those whose places should not have been called a farm by either the old or the new definition.

mate for 1962 is 14.3 million, a further drop of 1.3 million in the subsequent 2-year period. Although the farm population is now about one-third smaller than a decade ago, it is significant that the absolute decline has shown no slackening. It has held around 750,000 annually, and in recent years this has been about 4 percent of the farm population. The Department of Agriculture has estimated that there is still considerable disguised unemployment on farms amounting to the equivalent of more than 1 million full-time workers who are not needed for farm work.

The reduction in farm population is quite selective as to age-groups and implies rather fundamental changes. The sharpest reduction in age groups on farms has occurred in the 20–29 year-old classes, despite a continuing higher proportion of 15–19 year-olds than in the nonfarm population. The migrants from farms have been concentrated in the young adult group—around 20 years of age. In general, as the young people from the farms enter the labor force, they go directly to nonfarm jobs and nonfarm residence without first taking farm employment and later transferring to nonfarm jobs. The sharp decline in the number of young adults on farms in the 20–29 age group has also brought a decline in the traditionally high farm birth rate. Thus, in 1960, the proportion of children under 5 years of age was lower on farms than in urban areas, whereas the proportion 5–9 years of age was larger in farm than in urban areas and the 10–19 age group was considerably larger in farm areas.

Decline in farm-operators

Perhaps, the most surprising aspect of the decline in farm employment is that the number of hired workers in agriculture has shown no appreciable change in the past 15 years during which period the number of farm operators has dropped by a half. The appropriate figures are shown in table 4, based upon the census series (now published by the Department of Labor) in which workers are classified by their principal employment. The Department of Agriculture series, which includes all part-time farm employment, shows the same general trend in this respect, although the total number reported doing some farm work is substantially higher than the classification of the census of those whose principal occupation is in farming. Mention has been made that the decline in farms has occurred chiefly in small and low-output farms. Such farms have few hired workers. Since the larger farms have not reduced their employment of hired workers, all of the decline in farm employment has thus occurred in the self-employed or farm-operator group and in the unpaid family worker group.

Table 3.—Percent Distribution of U.S. Population by Age, by Residence, 1960

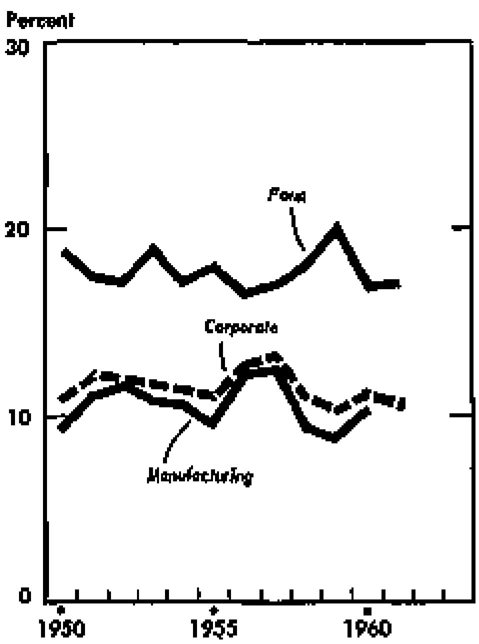
Age	Total	Urban	Rural farm
All ages	100.0	100.0	100.0
Under 5 years	11.3	11.2	9.9
5 to 9 years	10.4	10.6	11.0
10 to 14 years	9.4	8.8	11.0
15 to 19 years	7.4	7.0	9.4
20 to 29 years	12.1	12.5	8.4
30 to 39 years	13.7	14.1	10.7
40 to 44 years	6.5	6.6	6.3
45 to 64 years	20.3	20.6	23.2
65 years and over	9.0	9.1	9.3

Source: U.S. Department of Commerce, Bureau of the Census.

A part of the decline in farm population and in the number of farms is attributable to a somewhat more restrictive definition of a farm, but the substantive change is that less productive farms have ceased agricultural operations at a rapid rate in the past decade.

FARM INVESTMENT HIGH

Plant and Equipment Expenditures for Farm and Nonfarm Sectors as a Percent of Their GNP



Data: SEC & OBE

U.S. Department of Commerce, Office of Business Economics 62-12-6

Table 4.—Agricultural Employment

[Millions]

Year	Persons 14 years of age and over		
	Hired workers	Self employed	Unpaid family labor
1947	1.7	5.0	1.0
1950	1.7	4.3	1.4
1953	1.6	3.8	1.3
1956	1.7	3.6	1.3
1959	1.7	3.0	1.1
1960	1.9	2.8	1.1
1961	1.7	2.7	1.0
1962[1]	1.7	2.6	1.0

1. First 10 months average.

Source: U.S. Department of Labor, Bureau of Labor Statistics. (This series was formerly published by the Bureau of the Census.)

Specifically, the former small-scale farm operators have sold the chickens and milk cows and quit farming generally to take nonfarm jobs or occupations as part of the increased specialization in agriculture. The number of farms with either milk cows or chickens dropped rapidly in the 5-year period 1954–59, and for the decade such farms declined about 50 percent. This decrease in numbers has brought about a considerable increase in the average scale of farm operations.

The number of farms with sales of less than $2,500 annually declined by nearly one-third between 1954 and 1959, from 2.7 million to 1.9 million, using the 1954 definition of a farm, or to 1.6 million on the basis of the new definition. The total number of farms with sales of over $2,500 was relatively stable, with a decline of about one-fourth in the number with sales of $2,500 to $5,000, little change for the $5,000 to $10,000 sales group, and a rise of more than one-third in those with sales of over $10,000. The rising proportion of farms with higher sales reflects a sharp rise in sales per commercial farm during this period as well as some consolidation of farms. An additional change is a very large rise in leasing of additional land by farm owners in order to obtain a larger and usually lower-cost operating unit.

Scale of operations increases

The increase in scale of operations is perhaps most clearly seen in a comparison of changes in production of corn by size of farm during the decade of the fifties. Between 1949 and 1959, corn harvested for grain increased 13 percent to 3.7 billion bushels in the latter year.

For all farm groups of less than 80 acres in size, there were appreciable declines in output during the decade, ranging from a drop of over 50 percent for those of less than 10 acres to a 15 percent decline in output for the 70 to 80 acre group. For the middle-size group from 100 to 180 acres, changes in output were generally small, with some decline in the lower part and some rise in the upper range. For the groupings of farms above 180 acres, increases in output were considerably above average, as the following tabulation shows:

Size of farm	Size of increase in output
180-220 acre	one-fourth
220-260 acre	nearly one-half
260-500 acre	three-fourths
500 or more acres	doubled

Farm investment stays high

While the use of manpower on farms has declined, there has been a high rate of capital investment throughout the postwar period. With the development of the new annual estimates of corporate and manufacturing GNP,[4] a comparison may now be made between farm and nonfarm capital expenditure in relation to output in each of these sectors, as shown in the chart on page 27. In the period since 1950, farm capital investment has ranged between 16 and 20 percent of farm GNP. In the past 2 years, it has been 17 percent. Although well below the peak rate reached in 1958, it is about average for the postwar period.

Nonfarm corporate capital investment has been running between 10 and 13 percent of corporate GNP during the same period, reaching a peak in 1957 and ranging lower in subsequent years. Manufacturing capital investment in relation to manufacturing GNP has been quite similar to corporate throughout the period.

One reason for the higher rate of investment relative to output in farming as against nonfarm industries is simply a reflection of the fact that more capital is used per unit of output in farming as compared with nonfarm activities. Since the late 1920's gross stocks of depreciable capital in agriculture have increased considerably more than output, in contrast to the nonfarm trend, which has shown a declining stock-output ratio. The use of a net stock-output ratio gives varying results, ranging from no change to a slight increase, depending on the depreciation variant used to derive net stocks.[5] In this particular instance the gross stocks, which show the greater increase in agriculture, appear to be a somewhat closer measure of capital in use.

4. See "GNP by Major Industries," SURVEY, October 1962 and "Corporate Profits and National Output," SURVEY November 1962.

5. See "Expansion of Fixed Business Capital in the United States," SURVEY, November 1962.

Foreign Trade

(Continued from page 23)

4, an indiction that such items were either (1) too insignificant to show separately since they amounted to less than $2.5 million during any one of the four half-year periods; or (2) were valued at more than $2.5 million and less than $10.0 million, but changed by an insignificant amount (less than $1.5 million from 1962 to the lowest or the highest of the three preceding years). Passenger car exports were among the few notable exceptions, since their performance in the first half of June 1962 topped that of each of the preceding January–June periods.

Lull in transport equipment

The third major export category distinguished by its relatively poor showing in 1962 was commercial transportation equipment. Exports of trucks in January–June were, in fact, the lowest for any comparable period since 1950, reflecting a decline in shipments of almost every individual type and size. Truck and bus tires, and railway equipment were also in greatly reduced demand. Although aircraft exports continued large in the first half of 1962, they have since declined from this high rate to the lowest value since early 1959.

Parts for assembly rising

The automobile industry's record exports of parts for assembly during 1962 provide an illustration of still another significant development in our export trade—the growing tendency on the part of a number of domestic manufacturers to supply foreign demand from assembly and other manufacturing facilities abroad rather than from facilities in the United States. This trend may be in part an indication that for some products the cost of labor used in such operations averages lower abroad than in the United States. But a much more significant factor is the mounting wall of foreign restrictions encountered by American manufacturers—tariffs, surcharges, quotas—which severely limit or entirely prohibit the importation of complete units.

Unfortunately, both passenger car and truck parts for assembly are included in a single "basket" export classification. Hence to what extent the decline in exports of trucks may have been compensated for by an increase in exports of truck parts for assembly cannot be determined.

The rise in exports of tractor parts and the decline in exports of completed tractors (see third section of table 4) may also constitute closely related developments. Moreover, at least part of our relatively high exports of parts for products such as pumps, typewriters, adding machines, and agricultural machinery—listed in Sections I and II of the table—was undoubtedly destined for assembly plants abroad.

U.S. machinery aids buildup of competing industries abroad

Although the major contribution of U.S. capital equipment exports to the buildup of basic manufacturing industries abroad is well known, the relationship between such exports of technologically advanced or custom-built equipment and our exports of other goods is perhaps less clearly defined. The data in table 4 afford some interesting evidence bearing on this very important tie-in.

To cite an example—circular hosiery knitting machinery occupies a prominent place among the numerous individual dynamic export performers within the specialized industry machinery grouping. By way of contrast, our exports of nylon hosiery which as recently as 1955 had amounted to $17 million, have since become so low that they did not warrant separate identification in table 4. Similar contrasting movements are shown in the table for exports of cotton textile machinery and cotton textiles; plastic manufacturing machinery and polyethylene resins; rubber manufacturing machinery and synthetic rubber; and rubber tire and tube building machinery and rubber tires and tubes.